Global health from the outside

Global Health from the Outside: The Promise of Place-Based Research

Introduction

Since the mid 2000s, degree programs in global health have proliferated at universities around the world, attracting a growing number of students.[1] At Dartmouth College, for example, Global Health offers educational opportunities for undergraduates, public health graduate students, medical students, and practitioners. And up the road at the University of Vermont, the Global Health Program is an important part of Vermont's only medical school. At nearby Middlebury College, the minor in Global Health is touted as the consummate liberal arts program. In all of these programs, students learn about global health through a series of classes taught by faculty from disciplines that range from public health to geography and anthropology. Much of this university-based global health remains committed to interdisciplinary practice and to a recognition of the complexity of global health problems. As interdisciplinary endeavors, global health programs tend to be subdivided into three main areas of focus: training and intervention, knowledge production, and regulation. Training experiences permit students to join health workers in faraway sites—notably Africa, Asia, and Latin America —to put into practice, or implement, what they learn in the classroom. But global health students not only practice biomedicine and public health, they also produce new knowledge, in the form of epidemiological data and novel biomedical technologies. And once they graduate, many of these students will work in governmental, nongovernmental, and corporate positions to regulate the spread of disease.

A number of scholars in the social sciences find themselves teaching in these new global health programs, even as they critique how they operate. In the first part of this article, we highlight critical studies of some of these programs, primarily from geography and anthropology.

Taken together, this critical scholarship shows how bodily biologies remain stubbornly "local," despite the standardizing thrust of global health (Lock and Nguyen 2010). This body of work provides an effective rejoinder to global health's claims about the geographical transferability and the universality of biomedicine; however, we argue that while scholars have refined their critiques of global health, the foci of critical studies have come to reflect the areas of focus of the very same global health programs they are examining: training and intervention, knowledge production, and regulation. By maintaining these divisions, critical scholars have yet to bring the full force of geographical and anthropological theory and method to bear on global health. To do this work, we propose an extension of the critiques of a standardized body and a geographically-coherent "globe" already underway, through a focus on place.

As the readers of this journal are certainly aware, place is more than simply location. It is a space imbued with meaning, shaped by social and political-economic forces, and the site for human-non-human interactions. As a result, place has always had a deep impact on and relationship with health. A focus on place will push the attention of critical scholars away from the broad structures of global health programs and toward the people and environments in and around their sites of implementation, thereby yielding novel insight into the impact of global health. There is much to be said about the institutional and disciplinary silos that hamstring global health programs, and the political-economic structures that maintain them (see: Nichter 2008; Farmer et al. 2013; Adams 2016). Our intervention, however, is concerned less with the epistemological or organizational hierarchies of global health than with critically minded geographical and anthropological scholarship about it. Ultimately, we ask how the situation of our own knowledge as critical social scientists shapes the kinds of stories we tell about global health. As Crystal Biruk (2014) asks, "What implications does our own embeddedness in the

very offices and economies we critique have for the knowledge we generate?" In other words, how do geographers' and anthropologists' positions as faculty members affiliated with and researching global health at and through the university affect the knowledge they produce about global health?

In the second part of the article, we mobilize some of the core work of political ecology and critical medical anthropology to unpack the concepts of health and place so familiar to the readers of this journal. Over the past couple of decades, medical anthropologists have done a thorough job of unpacking the concepts of health and the body; political ecologists have similarly interrogated concepts of place, nature, and more recently, health. Bringing these two together yields important insight into global health and the critical scholarship about it. Methodologically, our place-based approach draws on these core ideas to attend to the human-human and human-nonhuman interactions that occur outside the institutions and interventions self-consciously identified with global health. This provides a way to analyze global health that moves beyond the categories of practice (training and intervention, knowledge production, and regulation) set by global health programs. In the third part of the article, we draw on our own work in South Africa and Nicaragua to model a place-based approach that highlights the particularities of places that are embedded in broader historical and spatial contexts, yet remain outside the margins of global health initiatives.

Critical Studies of Global Health

As we note above, critical studies of global health abound in medical anthropology (e.g. Fassin 2006; Biehl and Petryna 2013; MacPhail 2014; Adams 2016; Brives, Marcis, and Sanabria 2016), and to a lesser extent in geography (e.g. Brown, Craddock, and Ingram 2012; Brown and Moon 2012; Herrick 2014; Reubi 2016; Taylor 2016). These studies have tended to

break down according to the same areas of focus as the programs they analyze: (1) examinations of *training* and clinical *interventions*; (2) explorations of the *production of global health knowledge*, especially in the Global South; and (3) studies of the novel modes of governmental *regulation* emerging today. While this work tends to break down into these three areas of analysis, two other insights unite recent critical scholarship. First, this work reveals that global health training, knowledge production, and regulation perpetuate the notion that bodies are "standardizable" and globally interchangeable. Second, it shows how knowledge of bodies has been couched in "objective," biomedical terms that obscure the power relations that produce health inequalities in the first place. In this section, we argue that while the focus on bodies (individual and collective) in this literature might point to a place-based approach, this emphasis on the body has meant that too little attention has been paid to the environments that and the people who lie outside the spaces of biomedical intervention and that shape the places sick and healthy people inhabit.

Within this literature, critical work has emerged in response to or in conjunction with educational programs that integrate undergraduate and graduate *training* and bench and field research with direct medical interventions. For example, Crane (2011) takes the Consortium of Universities for Global Health to task for the fact that proposed "partnerships" between First World universities and Third World hospitals and schools rarely materialize (see also: Adams 2010). It is often the First World universities, and more specifically their students, that benefit from these relationships. Semester- or year-long practical experiences in Third World settings are increasingly de rigueur for students; medical schools see international rotations as a tool for making more sensitive, flexible, and skilled doctors "back home" in Europe and North America. Ethnographic scrutiny of such "clinical tourism" (Wendland 2012) shows how encounters

between students, teachers, and clinicians tend to reinforce rather than break down the social and geographical distance between biomedicine's powerful "centers" in the Global North, and its margins in the Global South (see also: Brada 2011). This then reinforces the uneven political economy of health care across the globe (Nguyen 2010). While this is an important insight, especially if it can be used to make more just programs, it tends to frame training as only located in formal university partnerships. As we show below with an example of how urban Nicaraguans learn about disease-causing bacteria and disease-carrying mosquitoes, a shift in the focus of research from program to *place* affords an understanding of global health "training" that extends well beyond the classroom, whether in the university or at a clinic.

Other work moves beyond the question of training to focus on *interventions* in the name of global health. This work has tended to focus on the imposition of programs and/or policies that come from large, multinational institutions and foundations like the WHO or the Gates Foundation. For example, Stephen Taylor critiques the large-scale global health rhetoric inspired by the Gates Foundation around the "eradication" of various diseases. By detailing the different discourses of two different polio eradication campaigns in Pakistan, he reveals a focus on individual people as the problem for polio eradication, rather than broader political-economic forces (Taylor 2016). In another example, Clare Herrick uses contingency theory to examine the unexpected results of the implementation of an alcohol tax in Botswana implemented in response to new global health priorities (Herrick 2016). These critiques are important, but like the scholarship on training, they focus on the impacts of formal interventions, often carried out by governments or NGOs in the Global South at the behest of multinational institutions, foundations, or governments in the Global North. As a result, the actors – from global institutions to

individuals – are all already located in the formal networks of global health (see also: Campbell, Cornish, and Skovdal 2012).

Another key component of global health "partnerships" is the *production of knowledge*. The labor of data collection is often performed by people who live in the places where the diseases of most interest are endemic. For example, Biruk's (2012) ethnography of HIV/AIDS research in Malawi unpacks the hidden labor of global health knowledge production, revealing the ways in which seemingly straightforward surveillance involves a complex set of relations between project subjects, local data collectors, state health ministries, and project managers. Such relationships are uneven "negotiations" that reveal how the supposedly stable numerical indicators that are increasingly exported from the Global South to global health programs in the North, emerge in tense and often messy encounters (Biruk 2012) (c.f. Krieger 2001; Sparke Forthcoming). In uncovering this messiness, critical global health research challenges the notion that data – and by extension bodies – are standardizable. When ideas about biological and geographic similarity meet local political and economic variability (not to mention social and cultural contexts), research results are seldom what program organizers imagined (Wendland 2010; Brotherton and Nguyen 2013; Koch 2013). While insightful, this work remains tied to the networks from whence it comes, and more specifically to the people in those networks; it is limited to the actors enrolled in formal knowledge production schemes. Below, our work on dengue control in Nicaragua and the place-based nutrition program of a South African health center shows how multiple actors – rural Africans and urban Nicaraguans, patients, doctors, and community health workers -- produce knowledge about health—only some of which is biomedical—in an effort to create "healthier" environments and people.

While the literature on training, implementation, and knowledge production emphasizes the failure of global health to break down global divisions and local social and economic barriers, work in the third area of critical global health scholarship – *regulation* – describes the deliberate configuration of new kinds of barriers (Hinchliffe and Bingham 2008; Ingram 2010; Brown 2011; Sparke and Anguelov 2012). Specifically, studies of regulation have tracked the rise of a complex set of governmental responses to epidemics, what Sparke (Forthcoming) has called a culture of "body counting." Numerical measures of health gleaned from the knowledge production practices we describe above contribute to new regimes of power and knowledge, while simultaneously reinforcing old ones. In the face of "border-crossing" diseases like SARS and avian influenza, this data has led to the creation of new regulatory spaces, from airport checkpoints to sanitary cordons (Ali and Keil 2008; Lowe 2010). Scholarship on global biosecurity shows a simultaneous scaling up and scaling down of surveillance as global regulatory institutions manage populations in order to (re)produce a particular territorial order (Braun 2007; Lakoff and Collier 2008; Wallace 2009). Thus, "unhealthy" people are demarcated by the presence of pathogens in their bodies as well as their location in the Global South, and are kept away from "healthy" people in the North. While this work takes a step toward an analysis of place for health, the territory that these scholars identify remains largely political and economic, divorced from the biophysical environments in which people live. Though biosecurity measures themselves include attempts to regulate human movement and human-nonhuman interactions, they fail to account for the variability of such interactions. That variability, as we show in our examples of how tuberculosis converges with AIDS in South Africa and how Nicaraguan women understand dengue, is precisely what makes "place."

In summary, critical engagements with global health training and implementation, knowledge production, and regulation have much to say about the limitations of interventions that presume a standardizable body and a geographically legible world. They expose the local bodily and spatial variations that power differences obscure. In this sense, critical studies of global health are already finding "place" to be a useful critical analytic, but that place is limited to the site of intervention – the clinic, the hospital, or the university -- sites that are shaped by broader, often global, political-economic forces (see: Sullivan 2011; Street 2014). By taking global health training and implementation, knowledge production, and regulation as starting points, however, scholars risk sustaining a narrow vision that sees global health as residing in Northern institutions and their Southern enclaves, rather than in rural communities and their health centers or the yards of poor city dwellers. The persistently *non*standard bodies to which these studies call attention do not come into being on their own. Rather, human bodies come into being in interaction with nonhumans, as well as within the broader political-economic contexts about which these scholars write. In other words, global health projects encounter bodies-in-place. In the rest of this article, we ask how attention to place might expand critiques of global health. We suggest that to effectively critique global health (while also remaining effective as teachers, critics, and participants), scholars must return to the foundational methodological posture of political ecology and critical medical anthropology– long-term ethnographic research in sites outside of clinics, hospitals, classrooms, and international organizations (Adams, Burke, and Whitmarsh 2013; Pigg 2013).

Finding Global Health in Place

What do we mean by "health"?

A core tenet of critical medical anthropology and geography is that biomedicine is not the only way to understand health, and further that health is more than simply freedom from disease. Indeed, at least since Rudolf Virchow's pioneering work in the 19th century, a critical strain of social medicine has taken a combined view of the cultural, social, political-economic, and biological facets of health (Kleinman 1980; Lock 1993; Farmer 2006; Stonington, Holmes, and Editors 2006) . Such facets vary across time and space, meaning that "health"—seen not just as the absence of disease but as a state of total mental and physical well-being—is always context-specific. This attention to context is not, of course, exclusive to geography and anthropology.

What has tended to distinguish critical medical anthropology, perhaps, is its historical insistence that questions of health revolve around questions of the body, where the specifics of an individual's context shape her or his body and by extension her or his health (Scheper-Hughes and Lock 1987). While illuminating, critical medical anthropology has yet to sufficiently incorporate environmental aspects, like the health of livestock herds, the nutrient content of soils, climatic shifts, and sanitary conditions in homes and neighborhoods. Health geography, by contrast, has long attended to the importance of the broader environment for individuals' health, thereby extending understandings of health beyond the body, into the "natural," nonhuman world.

Geography has a long tradition of critical enquiry into questions of nature, especially in political ecology. Only recently has scholarship on nature taken up the question of the body (Mansfield 2011; Guthman 2012; Mansfield 2012; Guthman and Mansfield 2015). Using insights from health geography and political ecology more broadly, political ecologists of health understand health as always embedded in the biophysical world (Richmond et al. 2005; Mulligan, Elliott, and Schuster-Wallace 2012; Nading 2014; Beisel 2015). This is evident in the

examination of epigenetics, which reveals that even our genes – the basic material of human life – are always shaped by the environments in which we live (Guthman and Mansfield 2013, 2015). Recently political ecologists have brought these two strands together to understand the nature of the body and to understand "health as a nature-society question" (Mansfield 2008) (see also: Mansfield 2012; Hausermann 2015; Neely 2015). For political-ecologists, an attention to the environments in which people live as well as to human-non-human interactions are fundamental to understanding health. More broadly, recent critical scholarship on health in anthropology as well as geography has begun to account for the "nature of the body," as well as the "body in nature."[2] To that end, a number of critical social scientists have taken up Lock's idea of "local biologies," which suggests that the body's "nature" is anything but absolute or standard. Rather, that nature is the emergent, ongoing outcome of the body's embeddedness in social, political, and material contexts (Lock 1993; Brotherton and Nguyen 2013; Koch 2013; Lock 2013; Neely 2015; Nading 2016). The "nature" of the body and the "nature" of place are thus entangled.

In both medical anthropological and political ecological understandings of health, the material and symbolic are also always intertwined. Following work in critical medical anthropology and political ecology, we seek to combine these critiques, recognizing health as a nature-society question. We believe that the similarities in the approaches these disciplines take to their objects of study (the body for medical anthropology and the environment for political ecology) provide a fertile starting point for thinking critically about global health as situated in particular places.

What Do We Mean by "Place"?

A certain kind of place-based framework is well established in health geography, medical anthropology, and social epidemiology. This framework emphasizes how people in particular

geographical contexts interpret disease differently, how the social determinants of health are often place-based, and it unpacks the ways in which exposure to pathogens or hazards varies with location, class, gender, and ethnicity (for example: Diez Roux 2001; Ellen, Mijanovich, and Dillman 2001; Krieger 2001; Briggs and Mantini-Briggs 2003; Leatherman 2005; Hanchette 2008; Singer 2009; Rushton 2014; Thomas 2016). While this area of enquiry remains quite vibrant, an important strain of geographic theory has questioned the utility of "place" and "scale" as analytic categories, offering "site" as an alternative (Marston, Jones, and Woodward 2005; Woodward, Jones, and Marston 2010). Critics have argued that both global political and economic connections (and disconnections) and scholarly knowledge production make places seem like "natural," bounded locations, even as they are socially produced (Soja 1996; Gupta and Ferguson 1997; Massey 2005). Seen as socially produced, then, place can be problematic as conceptual common ground for a critique of global health.

We argue, however, that for critical scholars of global health, a place-based perspective remains useful. We draw our notion of place from anthropological and geographical work in political ecology (e.g. Escobar 2001; King 2010), where place is not a static location, but is "constructed and reconstructed out of a particular set of social relations, experiences, and understandings" (King 2010: 5) in specific biophysical environments. For political ecologists, so-called "global" phenomena gain social significance, political salience, and material form only when actors engage them through particular discourses and lived experiences (Tsing 2005). The approach we have in mind favors a focus on the micro-*interactions* of bodies and environments (Guthman and Mansfield 2013, 3), rather than on structured relationships within global health. In this understanding of place, the non-human elements of environments are just as important as the human elements. Significantly, critiques from geography and elsewhere remind us that such

micro-interactions happen in a broader context; places are never simply local, they are always also global (Tsing 2005). These critiques further remind us that globalization is often accompanied by equally important processes of "localization" (Swyngedouw 2004). Such a position calls attention to the materiality of "global" connections, while challenging the divisions between local and global. Significantly, "locality" emerges in part through mobility and in part through "a dynamic instability and fluidity in 'nature'" (Raffles 1999: 324-5). "Place," as Raffles puts it, is "transformed—invented even—through physical, corporeal action," both human and nonhuman (Raffles 1999: 339). Here, the body, so central for medical anthropology's understanding of health, is a crucial component of place. Indeed, political ecologists (mostly from geography) are beginning to center studies of health on the body-in-place (Guthman 2012; Mansfield 2012) and body-as-place (Neely 2015). And place, like the "nature" or "health" that appears to be bounded in it, is in constant, ongoing socionatural production. As we show below, dengue and AIDS prevention programs devised by the WHO attempt to harness "local" Nicaraguan participants in the control of virus-carrying mosquitoes and to bring HIV control technologies to the most marginal parts of South Africa (a scaling down), yet the push to produce globally legible data on dengue and HIV (a scaling back up) de-values the particularity of local experience. These insights reveal that "local" environments are always connected to global processes.

Methodologically, we take inspiration from the ethnographic approaches of many political ecologists and health geographers who avoid the temptation to "embed" themselves in NGOs or conservation projects, choosing instead to work in villages, farms, and households to study the everyday human-nonhuman processes of place-making (Parr 2000; Turner and Williams 2002; West 2006; Macdonald 2016). Indeed, in their studies of nature, political

ecologists use a place-based framework in which ethnography and interviewing is coupled with quantitative research like soil sampling and ecological surveys to bring both the details of human practices and the intricacies of the biophysical environment into the same analysis (c.f. Fairhead and Leach 1996; Forsyth 1998; Stott and Turner 1998). Both human and non-human actors are always a part of this research. Such research, of course, examines the interactions of "local" people with "global" projects, but by doeing so from the places in which these projects touch down, it stresses the particular over the universal (Escobar 2001; Nadasdy 2003). Our place-based approach, located on the margins of or outside the spaces of training and intervention, knowledge production, and regulation established by self-described global health institutions, takes local action (and unexpected actors) as significant (and significantly in conversation with) "global" interventions, even as it reminds us that particular solutions to health problems may not always be globally "scalable" (Adams, Burke, and Whitmarsh 2013). This approach highlights the processes by which actions affect one another "ecologically," through local "social, biological, and political economic [sic] relationships" (Adams, Burke, and Whitmarsh 2013: 12).

Our use of "ecology" in the place-based approach is, however, more specific. Our examples use political ecology's approach to show how human bodies are not simply "exposed" to pathogens or hazards or risks in particular locales; rather, they "incorporate" the nonhuman activity into their own metabolic and immunological processes. Here, we are also indebted to the eco-social perspective on epidemiology developed by Krieger (2001, 2003, 2005, 2012) who has examined the ways in which human biology and ecological context shape bodily conditions over time. In this view, the nonhuman environments in which people live incorporate (and sometimes even mask evidence of) the human body's influence on its own "social nature" (Ingold 2000; Yates-Doerr and Mol 2012; Jackson and Neely 2015). Our political-ecology

approach – examining global health through places at its margins -- shows how people in places address health problems, produce knowledge about them, and regulate them in the ongoing, interactive engagements with their environments, and in ways that global health programs and the critical studies about them have consistently failed to recognize. We diverge from the eco-social perspective in that our approach is less disease-centric than place-centric. We are interested in the effects of global health programs on people, places, and diseases, which are not always the focus of those programs and which often lay beyond the reach of epidemiological data collection and analysis. Further, we are interested not only in how place, seen as a complex eco-social environment, produces sickness or health, but also in how attempts to confront sickness or promote health fundamentally reshape place.

Health as Bodies and Environments, Global and Local

Below we use our own ethnographic material from South Africa and Nicaragua to briefly show how both acute and everyday problems of infectious disease and nutrition, both of which are of interest to global health, can be critically understood through a place-based perspective. In these examples, bodies and environments come together with social structures and scientific practice in the places of rural South Africa and urban Nicaragua.

Making Sense of Tuberculosis in the Age of HIV/AIDS

We begin with the example of Gogo Mtembu[3] (*gogo* is the Zulu word for grandmother), an elderly Zulu woman who contracted a rare form of extra-pulmonary tuberculosis called miliary tuberculosis in a rural Pholela, South Africa. When Gogo Mtembu went to her local health center -- the Pholela Community Health Centre (PCHC) – to seek treatment, the nurses in the state-funded tuberculosis ward quickly realized that her case was too complicated for them. They brought her file down the hall to the internationally funded HIV/AIDS clinic, where the

only doctor was stationed. Dr. Smith looked at her x-ray, recognized this rare form of TB, and assumed she was HIV positive. He insisted she have an HIV test to confirm. When the patient refused (she had tested negative six months prior), the doctor became resistant to treating her; after all, donors funded his position to work with HIV patients, not TB patients. Though it took some convincing on the part of the nurse and the patient, the doctor eventually agreed to treat her even though she was HIV-negative. To explain this case of miliary tuberculosis, we need an understanding of the global protocols that international funders require local health care workers to follow, the human and nonhuman environment in which Gogo Mtembu lives, and the "ecology" of her body. We need a sense of her place. [4]

South Africa has one of the highest rates of HIV prevalence in the world and KwaZulu-Natal, Pholela's province, has the highest in the country (*South Africa HIV & AIDS Statistics*). HIV works by attacking a person's white blood cells, which impairs the capacity of her immune system to fight illnesses. As the immune system becomes compromised, opportunistic infections like tuberculosis begin to overwhelm the body, and AIDS develops. In places like Pholela, three out of every ten adults are HIV positive (Trust 2010) . Many of them have tuberculosis as well, making for high numbers of sick *and infectious* people. Because Pholela's residents are generally poor and spend much of their time in small, unventilated buildings, there is ample opportunity for airborne pathogens, like tuberculosis bacilli, to spread (c.f. Sonnenberg and al. 2004). In addition, in HIV-negative people, miliary tuberculosis is most common among older women, especially those with compromised immune systems (Hussain and al. 2004), which are common amongst the poor (Farmer 1999; Stillwaggon 2006). The combination of Gogo Mtembu's body – that of a poor, older woman – and the disease environment of Pholela – high numbers of immunocompromised people, rampant tuberculosis, crowding, and poor ventilation –

meant that she had a high likelihood of contracting this rare illness. In understanding the relationship between bodies and the environment in Pholela, we come to understand how Gogo Mtembu got sick, but this tells us nothing about why Dr. Smith initially resisted treating her.

Because of its high prevalence of HIV, Pholela was one of the first government sites for the rollout of antiretroviral therapy (ART). Funded by international donors like the Global Fund and the President's Emergency Fund for AIDS Relief (PEPFAR), the HIV clinic at the PCHC had to follow global protocols in order to receive funding. These protocols mandated that a doctor oversee all HIV patients and only HIV patients. They also enabled the doctor to make a diagnosis of AIDS based on clinical presentation, including certain opportunistic infections like extra-pulmonary tuberculosis (Southern African HIV Clinicians Society Guidelines for Antiretroviral Therapy in Adults 2008). This framework for diagnosing *and understanding* HIV/AIDS, when combined with the health environment of Pholela, helps to explain the doctor's insistence that Gogo Mtembu must be HIV positive (especially before the doctor recognized her age). Significantly, these protocols, written in places like Washington, D.C. with the funding constraints of organizations like PEPFAR, assume a universal subject (a resource-poor, HIV-positive, young African). This assumption was based on a universal biology, where all opportunistic infections and HIV interact in the same way.

So doing, these global protocols misunderstood the place of Pholela, they misunderstood the environmental context in which ill health beyond HIV unfolded. Gogo Mtembu, a person outside of global health programs and therefore outside of global health frameworks, was sick with a rare form of extra-pulmonary tuberculosis because the illness environment *around* her included HIV, not because HIV was in her body. By ignoring the larger environment of illness, global health protocols failed in their local manifestation. In this case, we see how a place-based

approach takes into account the environment and bodies, the global and the local, to include people like Gogo Mtembu, who sit at the margins of global health interventions.

Nutrition, Health, and Microbial Entanglements in Nicaragua

Melisa was a community health worker (CHW) employed on a part-time basis by the Nicaraguan Ministry of Health. Her work familiarized her with global health scourges like dengue, tuberculosis, and AIDS, but like most people in her neighborhood on the outskirts of Managua, she was just as concerned about gastrointestinal (GI) infection; the most common disease among children in the low-income cities of Latin America. The threat of GI infections found the bodies of Melisa and her children entangled in dynamic ways within both a local urban environment and a global system of food and medical provision.

Melisa and her neighbors had well-developed strategies for procuring healthy food. They shared information about market stalls in Managua, and they practiced rigid rituals of food preparation, including washing, salting, and cold storage, all designed to limit the possibility that germs (labeled with the generic term *microbios*) would spread. Seen as mostly free of *microbios*, processed and packaged meat, dairy, and other foods (notably ketchup, cooking oil, juice, and soda) available in the enclosed supermarket, a subsidiary of Wal-Mart, were particularly valued. But like most women, Melisa had neither the time nor the money to supply all her family's needs from either the supermarket or Managua's formal market. Indeed, for staples from bread to cheese to tortillas, small cottage industries that used *microbios* in their production processes supplied a significant portion of her family's food intake.

The Ministry of Health's Department of Hygiene, staffed in Melisa's district by two sanitarians (*hygienistas*), was charged with inspecting the city's hundreds of small cottage operations, as well as open markets and the supermarket, for adherence to Nicaragua's sanitation

laws. In keeping with global health priorities that emphasize state responsibilities to guarantee clean food and water, the *hygienistas* worked to apply modern techniques of microbial surveillance that were certainly geographical. They attempted to locate microbes in particular places and to insulate people from them; they were enacting global health regulation in a local place. [5]

The *hygienistas* frequently identified establishments for inspection based on citizen reports. In many cases, such reports arose because of suspicion that food adulterated with *microbios* had caused an infection. But contacting the *hygienistas* was not the only—and certainly not the most reliable—strategy that residents employed to come to terms with the microbes in their midst. Women like Melisa were keen consumers of antibiotics, and they shared advice about the relative advantages of various broad-spectrum pharmaceuticals. Short (2-3 day) courses of such drugs, acquired through family connections or in unregistered pharmacies, were common when family members contracted ailments associated with *microbios*. Like processed and packaged foods, antibiotics circulated from points of production far from Nicaragua, through formal pharmacies and stores, and into a complex of less formal human-nonhuman interactions, including small-scale food preparation, that sustained Managua's population. While the *hygienistas* were often absent, the drugs were usually available.

Even in the absence of GI disease, in the cleansing of food before cooking and the routine "deparasiting" of children, women used a combination of strategies, from salt to bleach to pills to purgative herbs, to manage microbial ecologies. As in the example of Gogo Mtembu, Nicaraguans understood microbes to be part of the environments that surrounded their bodies, as well as the environments inside them. Care for one went along with care for the other. It was this place-specific set of practices, as much as expert knowledge emanating from state or global

health authorities, that produced knowledge about *microbios*. Human-microbe entanglements subvert the neat regulatory lines that global health interventions construct, such as those between pharmacies, clinics, and patients. By turns, human interaction with microbial life in Nicaragua is a source of sustenance (in fermented cheese, beer, and vegetables); a way of reinforcing kin and neighborhood ties through the informal trade in antibiotics; and a way of actively making and unmaking urban landscapes and bodies (c.f. Scheper-Hughes 1993; Paxson 2008). A geographical or anthropological approach to hygiene that only investigated how vulnerability to microbes corresponded to location, or only asked about the limits of antibiotic access, might miss the important specifics of place. The interactions of greater Managua's human-nonhuman residents, much like those of Gogo Mtembu and her family with bacilli and viruses, were ignored by hygiene programs that saw drug regulation, clinical medicine, and nutritional intervention as separate spheres for global health intervention. In Managua, microbial knowledge important to global health is built in places beyond the reach of global health programs and practitioners.

The Gendered Ecology of Dengue Fever in Nicaragua

Other aspects of everyday life in Nicaragua and South Africa are not ignored, but "hidden in plain sight," by global health's tendency to separate training, knowledge production, and regulation. For example, the Nicaraguan government's strategy for preventing dengue fever— like the strategies of most other dengue endemic countries— involves training CHWs to survey and suppress the population of the *Aedes aegypti* mosquitoes that spread the virus. Dengue is of particular concern for global health because networks of trade and travel permit mosquitoes, viruses, and people to travel rapidly, from partially "globalized" cities like Managua to centers of power and capital like Miami. Supervised by a predominantly male corps of vector-borne disease technicians from the Nicaraguan Ministry of Health, the CHWs, who are predominantly

female, make scheduled house-to-house visits in areas of urban poverty. In these visits, they identify *Aedes* breeding sites (usually water containers, used car tires, and garbage piles), collect data on the number and location of such sites, and apply chemical larvicides to stop mosquito propagation. In most cases, these visits also include an educational component in which CHWs teach householders to manage stored water and garbage to keep mosquito populations low.

Melisa worked as a CHW in several campaigns between 2008 and 2010. She generally enjoyed the work. It offered a small daily stipend of about US$1.50 per day, welcome to a person who, like most people in her neighborhood, was chronically underemployed. It also allowed her to spend her days walking through the community with other women, many of whom she counted as friends. Yet over the course of several campaigns, Melisa and her cohorts became disillusioned. By engaging local CHWs, the reasoning went, control of the mosquito would be more seamless and place-sensitive (c.f. Campos and al 2003; Parks and Lloyd 2004). Such dengue protocols, endorsed by the WHO, were among the first global health strategies to embrace "local participants" as key actors (Khun and Manderson 2007). These programs actually combined training and knowledge production (teaching CHWs both to find mosquitoes and to assemble data on their whereabouts) with regulation (giving states the tools to target and intervene in dengue "hotspots"). Yet they still failed to recognize the place-specific nature of human-mosquito encounters.

CHWs like Melisa saw *Ae. aegypti*, a mosquito that dwells most often in human houses, as an insect whose ecology they could understand with particular clarity. Women felt both more at risk from dengue and more responsible for recognizing cases in their family. The Ministry, however, failed to acknowledge that one of the keys to effective CHW work was the ability to convincingly relate socially to fellow householders. Instead, Ministry supervisors frequently

criticized CHWs about the speed and accuracy of their work. When CHWs agitated for better pay and flexible leave to accommodate childcare and other needs, their requests met with disdain. CHWs, the Ministry supervisors reasoned, should work as much out of a sense of loyalty to country and community (glossed by supervisors as *consciencia*), as out of economic need. The appeals to *consciencia* elided the ways in which the presence of dangerous mosquitoes in houses reflected a longstanding understanding of women's participation in Nicaraguan public life as always-already through domestic space. Such an understanding has been a hallmark of Nicaraguan politics, rather than global health programs (Babb 2001). Supervisors' critiques of CHWs were thus understood by the CHWs themselves as gendered.

Global dengue prevention protocols continue to operate on the assumption that ecological knowledge can be generated and translated seamlessly across scales. In the visits, health workers produce data that ultimately ends up in national and global databases, and they disseminate knowledge about the relationship between people and mosquitoes that comes to them through global information networks. In the protocols, the responsibility for keeping mosquitoes out of households is non-gendered; emphasis on households is simply scientific "best practice". Although it is couched as "technical" work— a straightforward process of search-and-destroy—the protocol certainly serves the interest of state ministries in producing data that proves that they are effectively confronting dengue. In reflecting on their daily interactions with mosquitoes, however, Melisa and her fellow CHWs became able to articulate their frustration with their marginal position in the Health Ministry's Prevention Strategy. They articulated the mosquito's presence in households through a place-specific history in which women's political agency has continually been routed through domestic space. As they "participated" in prevention, gender and politics became *more* rather than *less* relevant to everyday experiences of

the disease (c.f. Whiteford 1997). For example, through the dengue intervention, questions about the upkeep of houses became connected to questions about individuals' commitment to a revived Sandinista party-state for whom participation in public hygiene campaigns was fast becoming a gendered proxy for loyalty (see Nading 2014). The insights of political ecologists on the politics of translating "local" environmental knowledge, to which we alluded above, are key to a place-based understanding of the parallel production of global health knowledge, local medical knowledge, and political intelligence (c.f. Nadasdy 2003; Porter 2013). Only through a place-based understanding of knowledge can we come to understand the full impact of mosquito-control programs aimed at dengue, Zika, and other global pandemics.

Home visits and the implementation of environment modification by (female) CHWs and resident women are nothing new. Indeed, historical evidence shows that these interactions, which in Nicaragua produced some health benefits and some potentially serious complications, rely on relationships among government employees and local residents, a careful integration of traditional and biomedical knowledge, and an attention to bodily and environmental well being. In our final example, we return to Gogo Mtembu's home region in South Africa to recall a successful early social medicine program that used a place-based approach. It reminds us of the *practical* advantages of this perspective, as well as what we might learn by looking at the forms of knowledge, participation, and data that take place beyond the boundaries of global health interventions. By looking back to global health's richly integrated ancestry, we offer hope for the future.

Nutrition and the Birth of Community Oriented Primary Care

In April of 1940, the South African government sent a husband-and-wife doctor team, Sidney and Emily Kark, to set up its first rural community health center: the Pholela Community

Health Centre (PCHC). Over the next seventeen-or-so years, the Karks, along with several teams of doctors, nurses, and health assistants (precursors to today's CHWs) would work in Pholela and in the closest major city, Durban, to develop a new brand of social medicine called Community Oriented Primary Care (COPC). Their work in Pholela has long been touted as among the most successful social medicine programs in history (*Community Health: A Model for the World*). By the late 1950s, however, it became harder to work under apartheid, and Pholela's doctors emigrated to places like the United States, Israel, and Uganda. In leaving South Africa, these doctors brought COPC (and its sister discipline of social epidemiology) all over the world, to much success. Their efforts culminated in the WHO's Alma Ata Declaration of "health for all" in 1978.

The global success of this model depended in large part on its local success. COPC, as developed in Pholela, relies on a deep attention to place, including both people and their environment. When the Karks first arrived, they quickly set up a clinical practice, but they focused much of their energy on getting to know the communities around the health center. They did so out of a belief that the particulars of a place -- its people *and* its environment -- were at least as important to health as biomedicine or national and international policy. In setting up the health center, they hired a number of Zulu-speaking health assistants, designated a focus area for intervention, and set out to survey the community. Containing everything from basic demographic information to livelihood data to health histories to garden inventories, these comprehensive surveys offered the doctors a broad introduction to Pholela, while the process of data collection provided a convenient way for health center staff and the community to get to know each other. Once they had compiled data from these surveys, the staff designed its medical program in accordance with what they had learned. Through these surveys, their everyday

interactions, and clinical practice, the PCHC staff learned that in addition to cases of acute malnutrition, Pholela's residents overwhelmingly suffered from low-grade malnutrition, which compromised their overall health. This was because residents had little in the way of livestock, limited land to cultivate, a small variety of crops, and few products to choose from at expensive local shops (Kark and Steuart 1962; Kark and Kark 1999).

In response, the staff created a strategy that was appropriate to the place of Pholela. The cornerstone was a far-reaching nutrition program that included "prescriptions" of powdered milk from the health center canteen and vegetables from its garden for patients who visited the clinic. It also included nutrition lessons, seeds, and even labor for families to build their own nutrient-rich home vegetable gardens. Finally, the PCHC also facilitated the provision of powdered milk (at a reduced rate) to local shops so that residents who did not have prescriptions could supplement the inadequate milk supplied by their cows. This program fit what health center staff had learned about the local community, its environment, and the agricultural practices of its residents. And it was astonishingly successful. In just the first 12 years, acute malnutrition rates dropped precipitously and overall health increased markedly, at least in part thanks better nutrition. A key lesson from this program was that by understanding that people's health was intimately connected to and shaped by their interactions with nonhuman elements of the environment (and the limitations of that environment) and that health was more than simply freedom from disease, the PCHC was able to greatly improve the overall health of area residents. As a result, the COPC model that came out of Pholela and was implemented around the world sought to root what has come to be known as "global health" in local places.[6] Indeed, it was precisely because of this attention to place that the PCHC has come to be recognized as one of the most successful health interventions in history.

It is this expansive notion of what health is that a place-based critique makes clear. Such a critique reveals how efforts to control nutritional and communicable diseases reshape local environments, changing people's relationships to farm animals, water infrastructures, waste systems, and one another. The importance of place and the promise of a place-based approach was once again vividly revealed amid the rise of microcephaly in babies born to mothers infected with the Zika virus in Northeast Brazil. Though it is likely that the virus itself played a major role in causing adverse birth outcomes, it remains troubling that microcephaly was so concentrated in one of Brazil's most impoverished and segregated areas. The WHO's declaration of Zika as a Public Health Emergency of International Concern certainly drew attention to the disease, but it may have masked the ways that uneven exposure to mosquitoes overlapped with uneven access to reproductive care. In other words, pregnancy was already risky in Northeast Brazil before Zika arrived. Understanding the place-specific dynamics of that risk remains essential to confronting the problem. A program that focused on the particulars of life, maternal health, childbirth, mosquito ecology, *and* the Zika virus – the place of Northeast Brazil – might have had a bigger impact on the lives of women and children in Northeast Brazil.

Conclusion: Meeting Global Health in Place

By meeting global health "in place," our examples highlight the roles that actors who sit outside the normal scope of training, knowledge, production, and regulation play in shaping and resisting global health's agendas. These actors—an elderly HIV-negative woman and the doctors who founded the Pholela Community Health Center when she was young, a Nicaraguan community health worker, her supervisors, and her neighbors, not to mention the cattle, crops, soils, insects, houses, and infrastructures that surrounded them — tell us a great deal about how

global health operates. The work and experience of such individuals --sometimes patients, but also practitioners, CHWs, and what planners often refer to generically as "community members"—"[places] them at an especially difficult border zone at which the very legibility of their actions [is] negotiated" (Pigg 2013:131). The actions of many of the people we write about above are seldom legible through the formal pathways of global health programs; much of "what matters" in their lives (and health) happens far outside the clinics, data collection sessions, and disease control regimes commonly associated with global health (see: Adams 2016). And yet, their stories are crucial for understanding the full impact of global health programs.

If we return for a moment to the university-based global health programs with which we began, we can see the practical value of this place-based perspective for global health. As we explained above, field experiences, often in the Global South, are a key component of these programs, yet these experiences have a decidedly different flavor from more traditional study abroad programs. To qualify for such programs, students must complete a number of health-related courses. They rarely, however, have to achieve a standard of language proficiency or take geography, anthropology, history, or other courses about the places in which they study. These students are learning to be "experts" in global health, even as they have little knowledge about the places in which they will train. Because such programs not only fit the preexisting model of global health, but also are key components of it, students who have these experiences likely come away seeing global health as a set of activities around training, knowledge production, and regulation. A more traditional approach to study-abroad – an approach in which language, history, and culture are central – would have these students understand global health and their place within it differently. But the global health students we and our colleagues teach understandably demand "practical" skills. They see the development of "cultural sensitivity" as

one such skill that they need if they are to put their other skills to use in resource-poor settings (Handler 2013, 192). Clearly, learning about a site is not enough. Indeed, to truly "learn about the places one is going to serve," as Handler (2013) suggests, one must learn to be critical "of the idea of service" itself—what its ties to colonial, gendered, and political economic structures cause it to miss. What it – and much of the scholarship that critiques it -- misses are key components of place. For this reason, in this article we have critiqued what we see as a tendency in critical studies of global health to reproduce global health's own main areas of focus, namely, training and intervention, knowledge production, and regulation. We see this tendency as resulting in part from scholars' embeddedness in the very same global health programs where students demand to be taught skills and cultural sensitivity. The trouble with global health in practice may be mirrored in scholarship itself.

We acknowledge, of course, that critical work from "inside" global health still has pegagogical and practical value. We also acknowledge that disciplinary and epistemological silos make it difficult to immediately adopt the place-based, "outside" alternative we have sketched out above in global health programs themselves. Still, we remain optimistic that by nurturing an attention to place in their own work, critical geographers and anthropologists of health can build a place-based perspective into global health programs. As we conceive it here, place both precedes and exceeds the scope of even the most ambitious global health intervention. Approaching global health "from the outside", then, can lead to an understanding of health at a longer, perhaps "slower," temporal scale than an approach from the inside (Adams, Burke, and Whitmarsh 2013; Pigg 2013). At the same time, such an approach can make the voices and experiences of non-patients and non-practitioners (and possibly even non-humans) who dwell in and help to shape places more immediately apparent to global health practitioners as well as

students. This, we hope, will improve global health interventions, improve health, decrease inequities, and save lives. Critical scholarship can highlight how long-term interventions that address the dynamic, multidimensional aspects of health single, particular places (such as the PCHC) provide a counterweight to rapid responses aimed at individual diseases that characterize contemporary global health.

It is important to note, however, that we are not arguing for a place-based perspective on global health simply to flag deficiencies in college and university programs. After all, the rise of global health is saving lives, just as it is providing new opportunities for critical work. But if anthropologists and geographers want to critically examine institutions of training and intervention, knowledge production, and regulation, attention to what lies outside such institutions is essential. At a minimum, working from the outside would hedge against what Biruk (2014) has termed a "turn to global health" that risks "[separating] scholarly analysis from the specificities of local history and politics." Seen from outside what Biruk calls "the global health slot," training might still include the short formal workshops that prepare Nicaraguan CHWs and South African doctors to collect information suitable for global databases, but it also includes the conversations at markets and churches, on street corners, and in smoky huts where women learn how to discern the relative benefits of amoxicillin and ciprofloxacin or beetroot and powdered milk. Sites of knowledge production and regulation include not only laboratories and state ministries, but also local governments, schools, and even households like that of Gogo Mtembu, where the health of cattle and the viability of gardens, as much as state policies, affect how HIV and TB reshape the meanings of health.

We suggest framing these less obvious sites as "places," no less global than local, and always embedded in a more-than-human world. A place-based perspective takes critical studies

of global health back to the foundational insights of political ecology and critical medical anthropology, but it pushes those insights in new directions, bringing new actors into the stories we tell about global health. It is clear that global health programs are intensifying. Critical scholars would do well think more deeply about the ways in which that intensification, which takes place both in campus laboratories and in remote villages, instantiates the social and political construction of place. In doing so, it becomes possible to think of political ecology and medical anthropology as relevant to organ systems as much as to soil systems. This perspective, which permits studies of health and healing to expand beyond institutional spaces, stands to have tremendous benefits, not least in the interdisciplinary classrooms to which we return each year to test our theories and share our findings.

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[1] A quick survey shows programs at institutions like McGill in Canada, Oxford in England, the University of Sydney in Australia, and many in the United States.

[2] There are, of course, exceptions (c.f. Farmer 1999; Briggs and Mantini-Briggs 2003; Briggs and Nichter 2009; McElroy and Townsend 2009; Singer 2009).

[3] In the examples, all personal names are pseudonyms.

[4] For a more complete analysis see Neely 2015.

[5] For a more complete analysis of state hygiene in Nicaragua see Nading in press.

[6] There are a number of more recent examples of social medicine interventions. The most well known of which is Paul Farmer's long-term work in the Central Plateau of Haiti through Partners In Health. The Cuban healthcare system offers another example of place-based social medicine (see: Kirk and Erisman 2009; Huish 2013)

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